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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/811,078	KAKUTANI, TOSHIAKI
Office Action Summary	Examiner	Art Unit	
	Quang N. Vo	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>10 September 2007</u>.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-25</u> is/are pending in the application.
    4a) Of the above claim(s) <u>9-15,18,19,21,22,24 and 25</u> is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>1-8,16,17,20 and 23</u> is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☒ All   b)☐ Some * c)☐ None of:
        1.☒ Certified copies of the priority documents have been received.
        2.☐ Certified copies of the priority documents have been received in Application No. _____.
        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>06/02/05</u>.
4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Applicant's election without traverse of claims 1-8, 16, 17, 20 and 23 in the reply

filed on 9/10/2007 is acknowledged.

Claims 9-15, 18-19, 21-22, 24-25 are withdrawn from further consideration pursuant to

37 CFR 1.142(b) as being drawn to a nonelected species II and III, there being no

allowable generic or linking claim. Election was made **without** traverse in the reply filed

on 9/10/2007.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 20 is rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. Claim 20 is drawn to functional descriptive

material NOT claimed as residing on a computer readable medium. MPEP 2106.IV.B.1

(a) (Functional Descriptive Material) states:

"Data structures not claimed as embodied in a computer-readable medium are

descriptive material per se and are not statutory because they are not capable of

causing functional change in the computer."

"Such claimed data structures do not define any structural or functional

interrelationships between the data structure and other claimed aspects of the invention

which permit the data structure's functionality to be realized."

Claim 20, while defining a program, does not define a "computer-readable

medium" and is thus non-statutory for that reasons. A program can range from paper on

which the program is written, to a program simply contemplated and memorized by a

person. The examiner suggests amending the claim to embody the program on

"computer-readable medium" in order to make the claim statutory.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8, 16, 17, 20 and 23 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Shimizu et al. (Shimizu) (20030112293) in view of Otsuki (US

6,652,067) and Shimada et al. (Shimada) (US 6,293,643).

With regard to claim 1, Shimizu discloses an image output control system (e.g.,

figure 2, paragraph 0045) comprising an image processing device (e.g., a

control/operation portion 13, paragraph 0045) that makes image data subjected to a

preset series of image processing, and an image output device that creates multiple

different types of dots having different densities per unit area according to a result of the

preset series of image processing, so as to output an image (paragraphs 0014, 0047),

said image processing device comprising: a dot number determination module (e.g.,

printer driver, paragraph 0047) that determines a number of dots to be created in each

pixel group, which is set to have a predetermined number of multiple pixels included in

the image, with respect to each of the multiple different types of dots according to the

image data (paragraph 0068); and a number data output module that outputs (e.g., the

program of the control/operation portion 13 that perform the function disclosed,

paragraph 0071) the determined number of dots to be created in the pixel group with

respect to each type of dot, as dot number data of the pixel group (paragraphs 0072,

0073), to said image output device (e.g., a printing system, figure 2, paragraphs 0044,

0045).

Shimuzu differs from claim 1, in that he does not explicitly teach image output

device comprising: a number data receiving module that receives the dot number data

of the pixel group with respect to each type of dot; a pixel position determination module

that determines positions of dot-on pixels in the pixel group with respect to each type of

dot, based on the dot number data of the pixel group with respect to each type of dot

and the specified priority order; and a dot formation module that creates the multiple

different types of dots at the determined positions of the dot-on pixels and a priority

order specification module that specifies a priority order of individual pixels in the pixel

group for dot creation.

Shimada discloses image output device comprising: a number data receiving

module that receives the dot number data of the pixel group with respect to each type of

dot (e.g., a transfer buffer that outputs dot on-off signals to the ink spout heads, column

8, lines 54-55); a pixel position determination module that determines positions of dot-

on pixels in the pixel group with respect to each type of dot, based on the dot number

data of the pixel group with respect to each type of dot (e.g., the program of the CPU

that perform the function disclosed at, column 8, lines 44-56); and a dot formation

module that creates the multiple different types of dots at the determined positions of

the dot-on pixels (e.g., the program of the CPU that perform the function disclosed at,

column 7, lines 52-67).

Otsuki discloses a priority order specification module that specifies a priority

order of individual pixels in the pixel group for dot creation (column 4, line 66 – column

5, line 25; figure 10F, column 7, lines 17-27).

Therefore it would have been obvious to one of ordinary skill in the art at the time

of the invention to have modified Shimuzu to include a priority order specification

module that specifies a priority order of individual pixels in the pixel group for dot

creation as taught by Otsuki and to include image output device comprising: a number

data receiving module that receives the dot number data of the pixel group with respect

to each type of dot; a pixel position determination module that determines positions of

dot-on pixels in the pixel group with respect to each type of dot, based on the dot

number data of the pixel group with respect to each type of dot and the specified priority

order; and a dot formation module that creates the multiple different types of dots at the

determined positions of the dot-on pixels as taught by Shimada. It would have been

obvious to one of ordinary skill in the art at the time of the invention to have modified

Shimuzu by the teaching of Otsuki to process and record image pixels more efficiently

and to have modified Shimuzu by the teaching of Shimada to prevent of banding in a

printing device.

With regard to claim 2, Otsuki discloses wherein said priority order specification

module selects one out of multiple options for the priority order, which are provided in

advance, with respect to the pixel group (column 7, lines 17-27).

With regard to claim 3, Shimuzu and Shimada disclose wherein said number data output module has a dot number combination mapping table that maps each combination of numbers of the multiple different types of dots to a preset code (paragraph 0092, Shimizu), said number data output module (e.g., control/operation portion 13, paragraph 0090, Shimizu) refers to the dot number combination mapping table to convert a combination of the numbers of the respective types of dots determined with respect to the pixel group to a corresponding preset code and outputs the preset code, in place of the dot number data of the pixel group, to said image output device (paragraphs 0090, 0091 and 0092, Shimizu), and said number data receiving module comprises: a code mapping table that maps each preset code to a combination of the numbers of the multiple different types of dots (e.g., figure 26, column 15, lines 52-65, Shimada); and a number data conversion module that receives the output preset code of the pixel group, and refers to the code mapping table to reconvert the received preset code to dot number data of the pixel group with respect to each type of dot (e.g., the program of the control circuit that perform the function disclosed at column 16, lines 16-29, Shimada).

With regard to claim 4, Shimada discloses wherein said pixel position determination module sequentially determines the positions of the dot-on pixels with respect to each type of dot in a descending order of the density per unit area of the multiple different types of dots (column 10, lines 9-15).

With regard to claim 5, Shimizu discloses wherein said dot number determination module comprises: a first dot density data generation module that generates first dot

density data representing a density of a first dot to be created in the pixel group, based

on the image data, where the first dot has a highest density per unit area among the

multiple different types of dots (e.g., the program of the control/operation portion 13 that

perform the function disclosed at, paragraphs 0071, 0072), a second dot density data

generation module that generates second dot density data representing a density of

either of the first dot and a second dot to be created in the pixel group, based on the

image data, where the second dot has a second highest density per unit area among

the multiple different types of dots (e.g., the program of the control/operation portion 13

that perform the function disclosed at, paragraphs 0071, 0072); a threshold value group

storage module that stores a threshold value group consisting of multiple threshold

values, which respectively correspond to the predetermined number of multiple pixels

included in the pixel group (e.g., employing different threshold values, paragraph 0076);

a first dot number determination module that compares the first dot density data with the

threshold values included in the threshold value group and sets a number of threshold

values that are smaller than the first dot density data to a number of the first dots to be

created in the pixel group (paragraph 0076); and a second dot number determination

module that compares the second dot density data with the threshold values included in

the threshold value group and sets a number of the second dots to be created in the

pixel group, based on the preset number of the first dots and a number of threshold

values that are smaller than the second dot density data, said second dot number

determination module comparing the second dot density data with only threshold values

that are greater than the first dot density data and counting the number of the threshold

values that are smaller than the second dot density data, so as to set the number of the

second dots to be created in the pixel group (paragraphs 0076, 0077, 0078).

With regard to claim 6, Shimizu discloses an image output control system in

accordance with claim 5, wherein said threshold value group storage module stores the

multiple threshold values of the threshold value group in an order of magnitude of the

respective threshold value in the threshold value group, and said second dot number

determination module selects the threshold values that are greater than the first dot

density data, on the basis of the order of magnitude (e.g., the processing employ

different threshold values, paragraph 0076).

With regard to claim 7, Shimizu discloses wherein said first dot number

determination module starts comparison of the first dot density data from a threshold

value having an ordinal number selected on the basis of a most-recent setting of the

number of the first dots, and counts the number of the threshold values that are smaller

than the first dot density data (e.g., figures 9 and 10, paragraph 0076).

With regard to claim 8, Shimizu discloses wherein said second dot number

determination module, in the case of absence of any threshold value that is smaller than

the first dot density data, starts comparison of the second dot density data from a

threshold value having an ordinal number selected on the basis of a most-recent setting

of the number of the second dots (paragraph 0076).

Referring to claim 16:

Claim 16 is the method claim corresponding to operation of the device in claim 1 with method steps corresponding directly to the function of device elements in claim 1. Therefore claim 16 is rejected as set forth above for claim 1.

Referring to claim 17:

Claim 17 is the method claim corresponding to operation of the device in claim 5 with method steps corresponding directly to the function of device elements in claim 5. Therefore claim 17 is rejected as set forth above for claim 5.

Referring to claim 20:

Claim 20 is the computer program claim corresponding to operation of the device in claim 1 with program steps corresponding directly to the function of device elements in claim 1. Therefore claim 20 is rejected as set forth above for claim 1.

With regard to claim 23, the subject matter is similar to claim 1. Therefore claim 23 is rejected as set forth above for claim 1.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang N. Vo whose telephone number is 5712701121. The examiner can normally be reached on 7:30AM-5:00PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Y. Poon can be reached on 5712727440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Quang N. Vo   10/11/07
Patent Examiner

KING Y. POON
SUPERVISORY PATENT EXAMINER